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ALAMEDA POINT
SSIC NO. 5090.3

Department of Toxic Substances Control

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May 24, 2005

Mr. Thomas L. Macchiarella
Southwest Division Naval Facilities Engineering Command
Attn: Code 06CA.TM
1220 Pacific Highway
San Diego, CA 92132-5190

DRAFT REMEDIAL INVESTIGATION REPORT, IR SITE 27, DOCK ZONE, ALAMEDA POINT, ALAMEDA, CALIFORNIA

Dear Mr. Macchiarella:

The Department of Toxic Substances Control (DTSC) has reviewed the above referenced report dated March 2005. Our comments consisting of those prepared by the Geological Service Unit (GSU) and Human and Ecological Risk Division (HERD) are attached. Should you have any questions, please contact me at 510-540-3767 or mliao@dtsc.ca.gov.

Sincerely,

Marcia Y. Liao

Marcia Liao
Remedial Project Manager
Office of Military Facilities

cc: Greg Lorton, SWDiv
Jennifer Stewart, SWDiv,
Anna-Marie Cook, EPA
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Elizabeth Johnson, City of Alameda
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MEMORANDUM

TO: Marcia Liao, Project Manager
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700 Heinz Avenue, Suite 200
Berkeley, California 94710

FROM: Michelle Dalrymple, P.G. Michelle Dalrymple
Engineering Geologist
Geologic Services Unit

REVIEWED BY: Stewart W. Black, P.G.
Senior Engineering Geologist
Geologic Services Unit

DATE: May 24, 2005

SUBJECT: **REVIEW OF THE DRAFT REMEDIAL INVESTIGATION REPORT, IR SITE 27, DOCK ZONE, ALAMEDA POINT, ALAMEDA, CALIFORNIA DATED MARCH 2005**

ACTIVITY REQUESTED

Per your request the Northern California Geological Services Unit (GSU) has reviewed the *Draft Remedial Investigation Report for IR Site 27, Dock Zone, Alameda Point, Alameda, California* dated March 2005. The draft Remedial Investigation (RI) was prepared by Bechtel Environmental, Inc. (Bechtel) for the U.S. Department of the Navy (Navy), Naval Facilities Engineering Command, Southwest Division. GSU has reviewed the document with respect to the geologic and hydrogeologic interpretations, the characterization of nature and extent of contamination, and the conclusions and recommendations presented. Review activities consisted of reading the document and reviewing the file for background issues.

PROJECT SUMMARY

The purpose of the report is to present the results, conclusions, and recommendations of the RI conducted for IR Site 27. The specific objectives of this RI were to:

- Characterize the nature and extent of soil and groundwater contamination;
- Assess any health risk to human receptors by performing a human-health risk assessment (HHRA);
- Assess any health risk to ecological receptors by performing a Tier-1 screening level ecological risk assessment (ERA); and
- Collect information to support a Navy recommendation of either no further action or further action.

The results of several investigations performed at IR Site 27 prior to the RI were compiled, reviewed, and evaluated. Additional soil, groundwater, and soil gas samples were collected during the RI and analytical testing was performed. The results of these activities were documented in the draft RI report. Based on the results of the RI, the Navy recommends progressing to a feasibility study (FS) to address chlorinated volatile organic compounds (VOCs) in groundwater that exceed drinking water criteria at IR Site 27.

GENERAL COMMENTS

A. GSU would like to commend the Navy on the quality of this document. The document is well written and clear. The data presentation is inclusive of nearly all of the necessary information to allow the reader to review the document with ease. There are a few general comments specified below that GSU feels will increase the completeness of the report and the confidence of the interpretations contained within the report.

B. It is the opinion of GSU that the discussion of hydrogeologic conditions at IR Site 27 should be expanded. First of all, the RI should include additional information to support the determination that soil and soil gas samples were not collected from saturated portions of the subsurface (i.e. that they were in fact collected from depths above the capillary fringe). Additional analysis of groundwater flow directions, gradients, and velocities should also be provided in Section 2. Historical water level data should be used to create hydrographs so that seasonal fluctuations can be observed. In addition, it is postulated in the RI that the source of VOCs in groundwater at IR Site 27 may be upgradient of IR Site 27. However, GSU believes that the groundwater flow directions, gradients, and velocities need to be better defined, and upgradient sources need to be identified, to determine if this may actually be the case. **Please consider expanding the hydrogeologic interpretations and discussions to include the elements listed above (see Specific Comment No. 12).**

C. The Johnson and Ettinger (J&E) model for vapor migration into indoor air was used to estimate potential risks associated with VOCs in soil gas beneath IR Site 27. DTSC guidance indicates a strong preference for using soil gas data to perform these analyses due to uncertainties associated with soil and groundwater sampling methods and partitioning equations (*Interim Final Guidance for the Evaluation and Mitigation of Subsurface Vapor Intrusion to Indoor Air*, DTSC, December 2004). However, DTSC guidance states that soil gas samples should be collected from depths of no less than 5 feet below the ground surface (bgs) to minimize barometric pumping effects. At IR Site 27, soil gas samples were collected from depths of 3 to 4 feet bgs because of the shallow groundwater table. Because groundwater has been reported to be encountered as shallow as 3 to 4 feet bgs at IR Site 27, it is unclear whether these samples were actually collected in unsaturated portions of the subsurface above the capillary fringe (see General Comment B). **Please provide additional information to support the use of the soil gas data collected from IR Site 27 for the J&E model.**

In addition, DTSC indoor air guidance suggests using groundwater data as input to the J&E model in addition to soil gas data when known groundwater contamination exists. Quantification of both risks is a way of evaluating which contamination source provides the greatest health threat. **GSU requests that an additional analysis of the groundwater to indoor air pathway be performed for IR Site 27 using the J&E model.**

Finally, based on GSU's review of Appendix K3 (which presents the J&E modeling results) it appears that the input values used for soil physical parameters are U.S. EPA default values rather than site-specific values obtained from geotechnical analyses of soil samples collected during the RI. **Please consider using site-specific values, or clarify why site-specific values were not used.**

D. It is the opinion of GSU that the RI should provide a more rigorous analysis of potential sources of contamination at IR Site 27 for fuel-related VOCs and halogenated VOCs in soil, soil gas, and groundwater. The RI states that the distribution of chlorinated VOCs in groundwater is generally consistent with the distribution of chlorinated VOCs in soil and soil gas samples but lacks a systematic and rigorous approach to the analysis of the data. The relationship between contaminant hot spots in soil gas and groundwater is not demonstrated, and it appears that data gaps may be present in soil (see Specific Comment Nos. 19, 20, and 23). In addition, it is the opinion of GSU that the vertical extent of VOCs is not characterized and represents a data gap (see Specific Comment No. 24).

GSU questions whether the plume that originates from the western side of Building 168 may be related to infiltration along the railroad track of spills and/or washdown from the storage areas located on the western side of the building. If the railroad track is unpaved, the railroad track may provide a mechanism to allow infiltration of contaminants.

GSU also questions the statement that the contamination in groundwater and soil gas at IR Site 27 may be from off-site sources. If this hypothesis is to be supported, a thorough analysis of the hydrogeology and an evaluation of the relationship of on-site contaminants to off-site sources must be provided (see General Comment B).

GSU requests that an additional section be added to the RI report which discusses the relationship of contamination among soil, soil gas, and groundwater in an attempt to evaluate the source of contamination and identify whether any data gaps exist. Information regarding historical land use, historical railroad activities, condition of the railroad tracks, and preferential pathways should be included as part of this analysis.

SPECIFIC COMMENTS

1. Executive Summary. At the end of the third full paragraph on page ES-2 it is mentioned that a main roadway and railroad tracks cross the western portion of the site parallel to Seaplane Lagoon. **Please also mention that a spur of the railroad track crosses the center of the site adjacent to the western side of Building 168.**

2. Executive Summary. In the first paragraph it is stated that the horizontal flow gradient is approximately 0.007 to 0.01 foot per foot, as measured in monitoring wells. This statement is misleading. The horizontal gradient is defined as the slope of the water table and cannot be measured in wells. Water level data obtained from monitoring wells can be used to estimate the gradient. **Please revise. Please also include this information in Section 2.5.2 (*Alameda Point and IR Site 27 Hydrogeology*) and provide the data upon which it is based.**

3. Executive Summary. The *Remedial Investigation* section which starts on page ES-5 lists the standard operating procedures (SOPs) that were used for the RI. **Please add well abandonment to the list of SOPs.**

4. Executive Summary. It is stated that geotechnical data were used to confirm monitoring well construction details and evaluate aquifer parameters. **Please consider adding the results of the geotechnical data and a discussion of these evaluations to the main body of the RI report (see Specific Comment Nos. 13 and 15).**

5. Executive Summary. At the end of the *Soil Gas* section on page ES-11 it is stated that 2,2,4-trimethylpentane was reported in all soil gas samples collected during Phase IV, and was distributed randomly across the site. However, this compound was reported at similar concentrations in all Phase IV soil gas samples analyzed using method TO-15, and it is the opinion of GSU that its distribution in soil gas is not random but is uniform across the site.

   It is further stated that 2,2,4-trimethylpentane was not reported in any soil or groundwater samples and does not appear to be related to a release at IR Site 27. **Please clarify whether the analytical methods used for soil and/or groundwater samples would routinely report this analyte.**

6. Section 2.3.2 – IR Site 27 Geology. It is unclear what the initial estimated thickness of lithologic units was based on and how the lithologic units, which consist of similar soil types, were distinguished from one another. **Please clarify. Also, please consider referencing the geologic cross-sections (Figures 2-5, 2-6, and 2-7) in this section of the report, which visually support the information that is being described.**

7. Section 2.5.2 – Alameda Point and IR Site 27 Hydrogeology. GSU questions the information contained in Table 2-5 (Hydrogeologic Setting). It appears that the source of the information is TtEMI 1999 and ERM 1996. **GSU believes that this table should be updated with information obtained during the RI, or a separate table of hydraulic characteristics should be provided summarizing the most current information obtained during the RI. Specifically, a table showing the hydraulic parameters obtained from the slug tests should be included.**

8. Section 2.5.2 – Alameda Point and IR Site 27 Hydrogeology. It is unclear why only selected borings were used to compile geologic cross-sections C-C' and D-D'. There are several nearby borings (within 50 feet of the cross-section lines) that could be projected onto the cross-sections to present a more thorough picture of the subsurface conditions. **Please consider revising cross-sections C-C' and D-D' to include nearby borings.**

9. Section 2.5.2 – Alameda Point and IR Site 27 Hydrogeology. It is stated that Table 2-5 provides a comparison between the anticipated thickness of hydrogeologic units and the actual thickness encountered during RI field activities. However, GSU did not find this comparison to be evident on Table 2-5. GSU questions the relevance of the anticipated thickness of hydrogeologic units to the overall investigation. **Please clarify.**

10. Section 2.5.2 – Alameda Point and IR Site 27 Hydrogeology. It is stated that during the RI field activities for IR Site 27, the groundwater table was encountered in soil borings at depths of 4 to 7 feet bgs, with the exception of one boring, 27B08, where saturated materials were encountered at 2 feet bgs. There is no further discussion of or explanation for this anomaly provided in the RI report. **Please provide further discussion of this apparent anomaly.**

11. Section 2.5.2 – Alameda Point and IR Site 27 Hydrogeology. The groundwater flow direction arrow shown on Figure 2-11 should be oriented perpendicular to the lines of equipotential. The direction of groundwater flow on Figure 2-11 should also be consistent with the information presented on Figure 3-4 which shows the variation in groundwater flow directions across the site using two groundwater flow arrows. **Please revise Figure 2-11.**

12. Section 2.5.2 – Alameda Point and IR Site 27 Hydrogeology. As stated in General Comment B, GSU would prefer see additional evaluation and presentation of information regarding the hydrogeologic conditions at IR Site 27. **GSU requests the following information to be added:**

    - **A table of historical water level data including the ground surface elevation, top of casing elevation, depth to water measurements, date of measurements, and the corresponding water level elevations for each well.**
    - **A table of monitoring well construction details including new RI wells and older wells.**
    - **Hydrographs of historical water levels measured for each well (where available), and a discussion of seasonal fluctuations.**
    - **A table showing the hydraulic parameters obtained from the slug tests performed during the RI.**
    - **A discussion of the estimated horizontal hydraulic gradient and groundwater flow velocities at IR Site 27 based on site-specific data.**
    - **Information on the locations/distance from IR Site 27 for the well pairs used to estimate vertical gradients presented at the end of this section.**

13. Section 3.2.1.2 – Phase I Soil Sampling. It is stated that at 4 of the 12 soil borings drilled during Phase I, a soil sample was collected for the analysis of geotechnical parameters. **Please specify the rationale used to select samples for geotechnical analysis, and how the results of the analysis were used (see General Comment C and Specific Comment No. 4). Please consider adding a table presenting the results of the geotechnical samples collected during the RI.**

14. Section 3.2.2 – Phase II Sampling Activities. The installation of three new monitoring wells at IR Site 27 is discussed in this section. Also, a reference is made to the slug tests that were performed as part of the RI. **Please add a table of monitoring well construction details and aquifer parameters estimated from the slug tests, as discussed in Specific Comment No. 12, and refer the reader to these tables in this section.**

15. Section 3.2.2 – Phase II Sampling Activities. It is stated that from each of the borings installed for the three new monitoring wells, a soil sample was collected for analysis of geotechnical parameters. **Please specify the rationale used to select samples for geotechnical analysis, and how the results of the analysis were used (see General Comment C and Specific Comment No. 4). Please consider adding a table presenting the results of the geotechnical samples collected during the RI.**

16. Section 3.2.3.2 – Phase II Sampling Activities. The installation of five new monitoring wells at IR Site 27 is discussed in this section. **Please add a table of monitoring well construction details, as discussed in Specific Comment No. 12, and refer the reader to this table in this section.**

17. Section 3.2.3.2 – Phase II Sampling Activities. It is stated that three of the preexisting monitoring wells were decommissioned during Phase III. GSU questions the rationale for abandoning these wells. GSU also questions the methods that were used for well abandonment. **Please include a discussion as to why the wells were decommissioned and the procedures used to decommission the wells. Please also include well abandonment records, if available.**

18. Section 3.4 – Deviations from the Work Plan. Deviations from the work plan and work plan addenda are presented on Tables 3-10 through 3-12 of the draft RI report. GSU has the following comments regarding the information presented on these tables:

    a. It is stated in Table 3-10 that four soil samples were collected and analyzed for geotechnical parameters to be used as input for the J&E model. Based on GSU's review of the J&E model information contained in Appendix K3, it appears that default values were used rather than site-specific values (see General Comment C). **Please clarify.**

    b. It is stated in Table 3-11 that at three direct-push locations, lithologic logging was not performed. **Please specify which borings were unable to be logged and why.**

    c. It is stated in Table 3-12 that in order to address U.S. EPA's request, two additional groundwater samples were collected from the top and bottom of the well screen in wells 27MW01 and 27MW06. However, since it was

determined that packers would not provide the desired results due to the continuous filter pack surrounding the well screen, GSU questions the methods that were used to collect representative samples. **Please clarify.**

19. Section 4.1.3.1 – Volatile Organic Compounds. One soil sample collected from 3.5 feet bgs in the northwest corner of IR Site 27 had a benzene concentration of 660 µg/kg. While this concentration may be only slightly above the residential soil preliminary remediation goal (PRG) for benzene, it is high enough to indicate that soil in this area may act as a continuing source to groundwater. It is the opinion of GSU that the extent of elevated benzene in soil at this location is a data gap. In addition, GSU questions the extent of elevated levels of BTEX in soil near the former washdown area (WD-166) and oil-water separators (OWS-166A and 166B). The soil sample from boring 154-SN-003 (located adjacent to the washdown area) had reported concentrations of ethylbenzene and total xylenes of 6,200 and 38,000 µg/kg, respectively. The reported detection limit for both benzene and toluene in this sample was 2,000 µg/kg (see Appendix B of the draft RI report). **GSU requests that all fuel-related and halogenated VOCs be evaluated with respect to their potential to act as continuing sources to groundwater, and to determine if any data gaps exist.**

20. Section 4.1.3.1 – Volatile Organic Compounds. The last paragraph of this section states that the limited distribution and low concentrations of halogenated VOCs (all with concentrations below soil PRGs) indicate that it is unlikely that there is a significant release of halogenated VOCs into soil at IR Site 27. GSU disagrees that soil data alone and in particular, in comparison to PRGs, can be used to determine whether a significant release has occurred. Soil data in combination with soil gas and groundwater data from IR Site 27 indicate that a significant release may have occurred. Because sources have not been identified, it is possible that soil sources exist that were not sampled during the RI and previous investigations (see General Comment D). **Please remove the statement or provide further analysis of the data to support it.**

21. Section 4.1.3.5 – Metals. There were 12 metals detected in soil at levels exceeding the Alameda Point background range but there is no discussion of whether or not IR Site 27 may be a source of metal contamination to the soil. **Please add a discussion of the spatial distribution of metals above background in soil, and whether or not it is indicative of an on-site source. Please also provide the reference used for Alameda Point background ranges.**

22. Section 4.2.3 – Nature and Extent of Groundwater Contamination. The groundwater flow directions shown on Figures 4-6 through 4-12 should be revised to be consistent with actual groundwater flow directions as depicted by the equipotential lines on Figure 2-11 (See specific Comment No. 11). **Please correct the groundwater flow directions depicted on these figures.**

23. Section 4.2.3.1 – Volatile Organic Compounds. In the *Volatile Organic Compound Summary* on page 4-22 it is stated that the distribution of chlorinated VOCs in groundwater is generally consistent with the distribution of chlorinated VOCs in soil and soil gas samples. It is further stated that there does not appear to be a current significant source of VOCs in soil contributing to the VOC concentrations in groundwater. GSU cannot concur with these statements without further analysis of the data and supporting discussion. The soil, groundwater, and soil gas maps are very comprehensive and contain a large amount of information for each media. However, because of the large amount of information, it is difficult to correlate between the maps. **Please provide additional analysis and discussion of the relationships among soil, groundwater, and soil gas data at IR Site 27. Please also provide information on the probable sources of groundwater contaminants (see General Comment D).**

24. Section 4.2.3.1 – Volatile Organic Compounds. In the *Volatile Organic Compound Summary* on page 4-22 it is stated that the vertical distribution of chlorinated VOCs in groundwater is generally limited to shallow depths of less than 20 feet bgs. GSU disagrees that the vertical extent of VOC contamination has been defined. In the area of highest vinyl chloride and cis-1,2-dichloroethylene (cis-1,2-DCE) contamination, discrete groundwater samples were not collected at depths greater than 10 feet bgs. In addition, low levels of vinyl chloride were found in some of the discrete groundwater samples collected at a depth of 20 feet bgs. **Please clarify.**

25. Section 4.2.3.3 – Metals. **Please change the reference in the last sentence of the first full paragraph from Section 3.5, which discusses data evaluation, data validation and detection limits, to Section 3.6, which discusses comparison criteria.**

26. Section 4.3.3 – Nature and Extent of Soil Gas Contamination. It is stated that many of the VOCs reported in soil gas were not reported in either soil or groundwater beneath IR Site 27 and therefore, some of the VOCs reported in soil gas at IR Site 27 may be related to activities outside the boundaries of IR Site 27. GSU cannot evaluate the validity of this statement without supporting information (see General Comment D). **Please provide additional information to support this statement or remove it.**

27. Section 4.3.3.1 – Fuel-Related Volatile Organic Compounds. The fuel-related compound 2,2,4-trimethylpentane was reported consistently in soil gas samples in the eastern portion of the site. This compound was detected at similar concentrations at all locations sampled and analyzed during the Phase IV investigation. **Please discuss the possible source and distribution of this compound in soil gas.**

28. Section 5.2.1 – Groundwater Migration. It is stated that vertical gradients measured in well pairs on IR sites to the east of IR Site 27 indicated that the vertical gradient is generally upward from the lower FWBZ to the upper FWBZ. GSU questions how data from these well pairs relate to IR Site 27. **Please clarify.**

    In addition, it is stated at the end of this section that review of VOC data for groundwater samples collected at two depths (10 and 20 feet bgs) indicated that the number and concentrations of VOCs reported are significantly less at 20 feet bgs than at 10 feet bgs and that the vertical migration of groundwater to deeper aquifers is therefore not considered a significant transport pathway at IR Site 27. GSU disagrees that the data are sufficient to support this determination. Groundwater data from areas within the highest levels of vinyl chloride and cis-1,2-DCE contamination were collected from 10 feet bgs. Discrete groundwater samples were not collected from depths greater than 10 feet bgs in these areas. In addition, no discernable fine-grained unit has been identified that would impede flow to deeper levels within the aquifer. **Please remove or revise the last two sentences in this section.**

29. Section 5.2.2 – Subsurface Conduits. It is stated in this section that storm drains and storm drain bedding are not a preferred groundwater flow pathway; therefore, they are not considered a significant pathway at IR Site 27. However, in Section 1.3.5 (*Storm Drain Investigations*) it is reported that water samples were collected from two storm drain manholes on IR Site 27 during the OU-1 and OU-2 data gap investigation. It is reported that eight chlorinated VOCs, including TCE, 1,2-DCE, and vinyl chloride, were found in these samples. It appears possible that these storm drains may actually be acting as a pathway for migration of chemicals. **Please clarify.**

30. Section 7.2 – Recommendtaions. GSU concurs with the Navy's recommendation of progressing to an FS to address chlorinated VOCs in groundwater that exceed drinking water criteria. However, GSU believes that data gaps exist with respect contaminant sources in soil and the vertical extent of groundwater contamination at IR Site 27. Further information should be provided in the RI to support conclusions regarding the characterization of these potential data gaps (see General Comment D).

If you have any questions, please feel free to contact me at (510) 540-3926 or at mdalrymp@dtsc.ca.gov.

Department of Toxic Substances Control

Alan C. Lloyd, Ph.D.
Agency Secretary
Cal/EPA

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Arnold Schwarzenegger
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MEMORANDUM

TO: Marcia Liao, DTSC Project Manager
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Berkeley, CA 94704

FROM: James M. Polisini, Ph.D.
Staff Toxicologist, HERD
1011 North Grandview Avenue
Glendale, CA 91201

DATE: May 6, 2005

SUBJECT: NAVAL AIR STATION ALAMEDA (ALAMEDA POINT) IR SITE 27, DOCK ZONE DRAFT REMEDIAL INVESTIGATION REPORT [SITE 201209-18 PCA 18040 H:48]

BACKGROUND

HERD reviewed the document titled *Draft Remedial Investigation Report, IR Site 27, Dock Zone, Alameda Point, Alameda, California* dated March 2005. This document was prepared by Bechtel Environmental, Inc. of San Diego, California. This review is in response to your request transmitted via electronic mail on April 4, 2005.

Installation Restoration (IR) Site 27 is located on the southeastern area of Naval Air Station (NAS) Alameda (Alameda Point), adjacent to the southeastern section of the Seaplane Lagoon (SPL). The location of Site 27 was under water in a 1937 historical photograph. Fill activities at Site 27 were probably completed in 1945, based on historical photographs. Site 27 and the surrounding area were referred to as the Engine Testing Zone, the Dock Zone and the Dock Support Services Zone. IR Site 27 was created due to Volatile Organic Compound (VOC) contamination reported at concentrations above detection limits in groundwater in the area of former Underground Storage Tanks (USTs) 15-1, 15-2 and 15-3. Site 27 was originally defined as a 2.2 acre area, but expanded to encompass 15.9 acres of dry land as a result of Navy RI field activities. The area within the expanded IR Site 27 boundaries is currently covered by pavement or buildings with the exception of a 1 to 2 acre unpaved area. The open space between Building 168 and the original eastern boundary of IR Site 27 is presently

used for maintenance equipment and vehicle parking, chemical storage and drum storage by the Department of Motor Vehicles. Historically, the open space served as an aircraft parking area. Ninety percent of this open space is currently paved with concrete or asphalt. Three buildings on piers in the SPL occupy the west portion of IR Site 27. These buildings are used for general office space and as a covered dock area for boat maintenance. Underground utilities (storm drain, sanitary sewer, gas, electric, steam and communication lines), underground storage tanks (USTs), railroad tracks and sidings and roadways (Ferry Point Road) were present, are present or cross IR Site 27.

NAS Alameda was an active naval facility from 1940 to 1997. Operations included aircraft, engine, gun and avionics maintenance; fueling activities; and metal plating, stripping and painting. Linked stormwater and industrial wastewater lines discharged to the Seaplane Lagoon in the Northwest and Northeast corners, as well as the Oakland Inner Harbor Channel side of NAS Alameda.

GENERAL COMMENT

The text should clearly state that the use of Preliminary Remediation Goals (PRGs) and 'ambient' concentrations is merely to direct the discussion to risk drivers and that all detected elements or compounds are included in the risk assessment.

SPECIFIC COMMENTS

1. U.S. EPA Region 9 Preliminary Remediation Goals (PRGs) are intended to screen sites, using the methodology provided in the full EPA PRG document (EPA, 2004), not for selecting '...a list of chemicals of interest at the site' (Section 3.6, page 3-25) (i.e., Contaminants of Potential Concern [COPCs]). For several NAS Alameda reports, HERD agreed with the Navy contractors that PRGs could be used to screen COPCs as long as no more than 10 carcinogens or non-carcinogens were screened out and the screening value was one tenth the PRG. This is a NAS Alameda specific exception to standard HERD HHRA guidance (HERD, 1994) that PRGs are for screening sites, not to screen COPCs. Please include a statement at the beginning of this section indicating that the comparison to PRGs is solely for discussion of risk drivers and that all elements or compounds detected in soil, groundwater or soil vapor are included (Section 6.2.1, page 6-2 and Table 6-1) in the Human Health Risk Assessment (HHRA).

2. As a point of historical record, HERD never agreed to point estimates of inorganic element 'background' concentrations developed from the data set for areas designated as pink, blue and yellow as indicative of an 'ambient' soil concentrations in these areas (Section 3.6, page 3-25). HERD has repeatedly requested an electronic copy of the data set referenced for soils (PRC, 1997; Tetra Tech EM, Inc., 2001) for independent evaluation, but has yet to receive an electronic copy. The Draft Final RI Report for Operable Unit 1 (OU1) contained a section with statistical

tests of OU1 site-specific soil concentrations to 'ambient', but the electronic copy referenced in the OU1 text (Volume II, Appendix E) was not furnished. This RI Report includes the statistical testing of IR Site 27 concentrations versus 'ambient' concentrations (Appendix J and Section 3.6, page 3-25). The Wilcoxon Rank Sum tests could only have been performed manually without an electronic copy of the 'ambient' data set. Please forward an electronic copy of the 'ambient' soil data set for the pink, blue and yellow areas in an excel-readable format to HERD.

3. The meanings of the footnotes indicated in the tabular listing of the chemical analyses for soil (Table 4-2) are not furnished. Please provide the explanation for these footnotes.

4. The U.S. Environmental Protection Agency (EPA) residential Preliminary Remediation Goals for soil listed (Table 4-2) were checked and found to agree with the most recent listing from the U.S. EPA Region 9 (EPA, 2004).

5. Please list the Reporting Limits (RL) for the dioxin/furan (TCDD/TCDF) results (Table 4-2) listed as 'none reported' in soil. The RLs can be included in a footnote of the table in the Draft Final RI Report for IR Site 27.

6. A subset of the regulatory and risk-based water criteria (Table 4-3) for water were checked and found to be correct. However, the risk-based EPA tap water PRG or the California tap water PRG, now indicated with 'NA', should be listed even in cases where a regulatory Maximum Contaminant Level (MCL) for Drinking Water is available as explained in footnote 'g'. MCL concentrations incorporate risk management decisions and are, therefore, not strictly risk-based. PRGs are strictly risk-based. In addition, the Action Level (AL) for copper (1300 µg/l) should be listed, as no Federal or California MCLs are available and this value is less than the EPA tap water PRG.

7. HERD assumes the California Toxic Rule (CTR) acute and chronic toxicity concentrations are included in a table of mostly human health criteria (Table 4-3) for use in an ecological screening. The San Francisco Regional Water Quality Control Board (SFRWQCB) has released Environmental Screening Levels (ESLs) for ecological screening of marine, estuarine and freshwater surface water bodies. The ESLs should be included in any aquatic ecological screening of SPL (Section 6.3.2.2, page 6-13), in addition to other aquatic screening criteria.

8. Because they were unvalidated, two quarters of groundwater monitoring data (spring 2004 and summer 2004) were not included in the RI data set (Section 4.2.1.2, page 4-12). Please indicate in the cited text section, that these two quarters of groundwater data are compared and contrasted to the groundwater nature and extent conclusions, based on earlier data, later in the text (Section 4.2.3, page 4-17).

9. HERD defers to the DTSC Geological Services Unit (GSU) for evaluation of the completeness of the IR Site 27 groundwater data set and the nature and extent of contamination (Section 4.2.3, page 4-17 through 4-28) from the groundwater data presented. This comment is meant for the DTSC Project Manager and no response is required from the Navy or Navy contractors.

10. The distribution of trichloroethene (TCE) and three degradation products (Figure 4-14) indicates geographic areas where remediation may reduce risk and/or hazard associated with inhalation of indoor and/or outdoor air. Remedial action or remedial measures in the two areas indicated by soil vapor may address elevated concentrations of the same or different organic compounds in soil or groundwater. Overlays of similar figures for organic compounds in soil may and soil vapor would address this possibility.

11. Please indicate the status of the investigation of Buildings 166 and 167, which are proposed as the source of VOCs in soil gas at IR Site 27 (Section 4.3.3.3, page 4-31). Also please indicate in the text the transport mechanism which would cause a potential release at Buildings 166 and 167 to be detected in IR Site 27 soil gas.

12. Please list the benzo(a)pyrene equivalent concentration for carcinogenic polycyclic aromatic hydrocarbons (PAHs) in addition to the maximum soil concentration for individual PAHs (Section 5.1.2, page 5-3).

13. Please explain how the source of IR Site 27 soil vapor VOCs can be volatilization from groundwater (Section 5.2.3, page 5-5) with a potential source of Buildings 166 and 167 to the south (Section 4.3.3.3, page 4-31) when the map of selected soil gases (Figure 4-14) does not show an increase in soil gas concentrations in the direction of Buildings 166 and 167.

14. Water filtration is not considered a primary current transport pathway (Section 5.2.4, page 5-5). While pavement may inhibit and reduce infiltration of rainfall or irrigation water, up to 80 percent of rainfall can infiltrate through pavement and landscaping in residential watersheds (Attachment A). The point of presenting this material is to indicate that infiltration may be a more significant transport mechanism for soil contaminants to shallow groundwater than stated. An assessment should always be made of common geographical patterns of soil contamination and groundwater contamination, especially in areas with shallow groundwater such as NAS Alameda.

15. Please explain the criteria for dividing the soil gas data into two sets which supposedly are representative of (1) current conditions as distinct from (2) future conditions (Section 6.2.1, page 6-2).

16. A subset of the Federal and California EPA Cancer Slope Factors (CSFs) and Reference Doses (RfDs) for the oral and inhalation routes of exposure listed

(Appendix K, Table K5-1) were checked and found to agree with the sources cited. This comment is meant for the DTSC Project Manager and no response is required for this comment from the Navy or Navy contractors.

17. Statements of Reasonable Maximum Exposure (RME) and Central Tendency Exposure (CTE) risk for the residential use scenario (Section 6.2.4.1, page 6-5) in the text agreed with the summary values presented in the tables (Table 6-2 through 6-5). This comment is meant for the DTSC Project Manager and no response is required from the Navy or Navy contractors.

18. Please indicate in the text the range of 'threatened, endangered, or species-of-concern' which were evaluated (Section 6.3.1.3, page 6-10) and concluded unlikely to occur at, or in the vicinity of IR Site 27, because of the barren and disturbed habitat. A simple indication in the text of the number evaluated and a reference to the detailed ERA listing (Appendix L, Section L.1.2.2, Table L-1) would be sufficient.

19. HERD does not agree that that soil invertebrates and plants would be completely absent from a commercially landscaped area. Please amend the sentence regarding lower trophic levels to indicate that 'Significant populations of lower tropic levels such as plants or soil invertebrates are not expected to occur....' (Section 6.3.1.6, page 6-12).

20. The IR Site 27 Conceptual Site Model (Appendix L, Section L.1.6, page L-18) appears appropriate to evaluate potential ecological hazard associated with IR Site 27. This comment is meant for the DTSC Project Manager and no response is required from the Navy or Navy contractors.

21. The food chain multiplier would appear unnecessary to derive tissue concentrations when using standard bioconcentration factors (BCFs) (Section 6.3.3.2, page 6-14), as long as the BCF is the concentration in tissue divided by the external media (e.g., water). In any case, any food chain multiplier would have to be greater than one in order to be additive in estimation of intake. Please provide an example, in the text, of the range of food chain multipliers used for risk drivers in the IR Site 27 ERA.

22. Use of the maximum soil concentration or the maximum groundwater concentration in estimating the Exposure Point Concentration (Section 6.3.3, page 6-14) in the ERA is protective of these receptors. This comment is meant for the DTSC Project Manager and no response is required from the Navy or Navy contractors.

23. Please provide further justification for using the minimum body weight (BW) for the vertebrate receptors (Section 6.3.3.3, page 6-15) assessed in the Ecological Risk Assessment (ERA). Mean BW or upper confidence limit estimates of the mean BW (i.e., 95 percent upper confidence limit on the mean) are the most commonly-used estimates of BW used in ERAs. In fact, it appears that the mean BW was used

(Appendix L, page L-63, Table L-16) rather than the minimum as indicated in the text.

24. Please indicate the vertebrateToxicity Reference Value (TRV) used to develop the Hazard Quotients (HQs) discussed in the text. The HQs could be representative of No Observable Adverse Effect Level (NOAEL) or the approximate midpoint of the observable effect level when Biological Technical Assistance Group (BTAG) TRV-low or TRV-high values are used. Please make the same clarification in the associated tables (Table 6-13 and 6-14) for mammalian and avian receptors.

25. The Exposure Point Concentration (EPC) for the aquatic ERA (i.e., the maximum groundwater concentration) (Table 6-15) was compared to the SFRWQCB ESL for estuarine surface waters for those contaminants with a HQ marginally below 1. A HQ based on the SFRWQCB ESL would not exceed one for those contaminants checked. Use of the SFRWQCB ESL estuarine value would, therefore, not change the results of the aquatic analysis of hazard. This comment is meant for the DTSC Project Manager and no response is required from the Navy or Navy contractors.

26. HERD does not agree with the conclusion that a HQ less than 1 necessarily indicates that multiple organic compounds in groundwater are 'unlikely to represent an ecological risk to ecological life' (Section 6.4.2.3, page 6-18). Many of the substituted benzene compounds listed with HQs less than 1 act, or are likely to act, as non-specific CNS depressants in an additive manner. The two organic COCs identified at concentrations presenting risk, but low frequency of detection, are also substituted benzene compounds (Section 6.4.3.2, page 6-19) expected to have the same effect on aquatic receptors. Some consideration of the potential additive action of the five substituted benzene compounds must be presented. This should be included in the Draft Final ERA, prior to progression to the recommended Feasibility Study (FS). The stated conclusion that VOCs are unlikely to present an ecological hazard requiring further investigation (Section 6.4.3.2, page 6-19 and Section 7.2, page 7-4) should be held in abeyance pending completion of the assessment of additive effects.

27. The terrestrial ERA conclusion is that no further investigation of terrestrial ecological hazard is warranted is based partly on the low likelihood of future development of terrestrial habitat at IR Site 27 (Section 6.4.3.3, page 6-19 and Section 7.2, page 7-2). Prevention of more significant terrestrial ecological habitat must, therefore, enter into the evaluation of remedial alternatives in the FS and may need to be included in the Master Plan for Alameda Point.

CONCLUSIONS

The text discussion of the early stages of the HHRA should include clarification that the comparisons to Preliminary Remediation Goals (PRGs) are only to focus the preliminary

discussion of risk drivers and that all detected elements and compounds in soil, groundwater and soil vapor are included in the HHRA. Improper use of PRGs has been a continuing discussion point, which the HHRA methodology employed for IR Site 27, as stated above, resolves.

Several technical ERA issues, mainly regarding calculation of intake for terrestrial receptors, remain to be resolved. The conclusions of the aquatic ERA cannot be evaluated until an assessment of the potential additive effects of substituted benzene compounds in groundwater is included. Protection of terrestrial ecological receptors, given the current refined screening status of the ERA, is dependent on maintaining in the current lack of significant habitat and should be considered in evaluating remedial alternatives and potentially included in the Master Plan for Alameda Point.

HERD is currently waiting for the Navy delivery of an electronic copy of the NAS Alameda 'ambient' data set to determine inorganic element 'ambient' soil concentrations acceptable to HERD. The results of this assessment, should the Navy deliver the 'ambient' data set, will be reported in a separate memorandum.

REFERENCES

San Francisco Regional Water Quality Control Board. 2004. Screening For Environmental Concerns At Sites With Contaminated Soil and Groundwater. Volume 1: Summary Tier 1 Lookup Tables. INTERIM FINAL - July 2003, (updated 2/4/04). California Regional Water Quality Control Board, San Francisco Bay Region, 1515 Clay Street, Suite 1400, Oakland, California, 94612. Available at: http://www.waterboards.ca.gov/sanfranciscobay/esl.htm.

U.S. Environmental Protection Agency. 2004. U.S. EPA Region 9 Preliminary Remediation Goals. U.S. EPA Region 9 Headquarters, San Francisco, California.

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Attachment A – Relationship of rainfall amount to runoff amount in residential areas with paved surfaces.

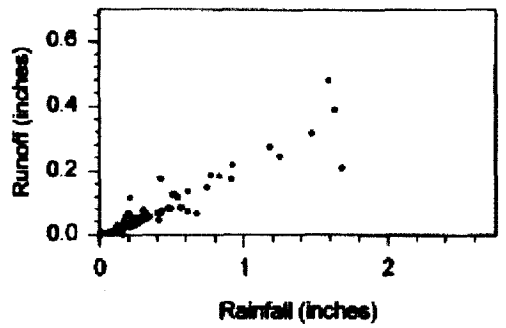

Figure A-1. Runoff vs. rainfall.

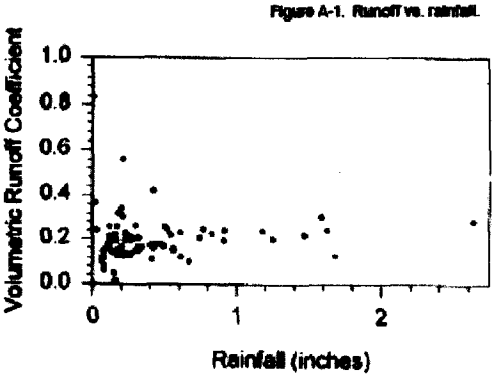

Figure A-2. Rv vs. rainfall.

[Text extract from Pitt, et al., 1999 referring the graphs presented above]

The plots of rainfall versus the volumetric runoff coefficient plot (Figure A-2) shows the ratio of the runoff volume, expressed as depth for the watershed, to rain depth, or the Rv, for different rain depths. This is a related plot to the one described above. If the Rv ratio was constant for all events, the rainfall versus runoff depth plot described above, would indicate a straight diagonal line, with no scatter. It is typically assumed that the above described relationship would indicate increasing Rv values as the rain depth increased. Figure A-1 shows a slight upwards curve with increasing rain depths. This is due to the rainfall losses making up smaller and smaller portions of the total rainfall as the rainfall increases, with a larger fraction of the rainfall occurring as runoff. The plot of Rv versus rainfall (Figure A-2) would therefore show an increasing trend with increasing rain depth. In most cases, the plots of actual data indicate a large (random?) scatter, making the identification of a trend problematic. The use of a constant Rv for all rains may also be a problem because of the large scatter. In many cases, the long-term average Rv for a residential area may be close to the typically used value. In Figure A-2, the values appear to center about 0.2 (somewhat smaller than the typically used value of about 0.3 for medium density residential areas), but the observed Rv values may range from lows of less than 0.04 to highs of greater than 0.5, especially for the smallest rains. The small rains probably have the greatest measurement errors, as the

rainfall is much more variable for small rains than for larger rains, plus very low flows are difficult to accurately measure. Obviously, understanding what may be causing this scatter is of great interest, but is difficult because of measurement errors masking trends that may be present. In many cases, using a probability distribution to describe this variation may be the best approach.